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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---------------------------------------------|-------------|----------------------|---------------------|------------------|
| 10/604,593 | 08/01/2003 | Richard P. Kolb | SSPI0015.001 | 1592 |
| 26629 | 7590 | 06/13/2005 | EXAMINER | |
| ZIOLKOWSKI PATENT SOLUTIONS GROUP, SC (ZPS) | | | ROJAS, BERNARD | |
| 14135 NORTH CEDARBURG ROAD | | | ART UNIT | |
| MEQUON, WI 53097 | | | PAPER NUMBER | |
| | | | 2832 | |

DATE MAILED: 06/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

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|------------------------------|--------------------------------------|------------------------------------|--|
| Office Action Summary | Application No. 10/604,593 | Applicant(s) KOLB ET AL. | |
| | Examiner Bernard Rojas | Art Unit 2832 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-27 is/are pending in the application.
- 4a) Of the above claim(s) 18-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-17,22-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 11, 12, 17 and 22 are rejected under 102(b) by Ojima et al. [US Pat. #4,419,643]

Claim 1, Ojima et al. discloses a solenoid [10] comprising:

a magnetically conductive shell [11] having a single coil [40] of wound wire;

a movable magnetic object [16] disposed within a bore of the single coil, the object configured to receive a magnetic force when current is induced in the single coil;

a permanent magnet [14] having a fixed polarity that magnetically repels the movable magnetic object when current is induced in the single coil and magnetically attracts an end of the movable magnetic object when no current is induced in the single coil; and

a non-magnetic spacer [43, 15] disposed between the permanent magnet and the movable magnetic object

Claim 2, Ojima et al. discloses the solenoid of claim 1 wherein the movable magnetic object is a plunger [col. 4 lines 45-47].

Claim 11, Ojima et al. discloses an electromagnetic switching apparatus comprising:

a bobbin [24] having a single coil of wire [40] wrapped there around;
a movable armature [16] disposed within the single coil; and
a permanent magnet [14] separated from the armature by a non-magnetic spacer [43, 15] wherein the permanent magnet magnetically attracts the armature when the coil is de-energized and magnetically repels the armature when the coil is energized.

Claim 12, Ojima et al. discloses the apparatus of claim 11 further comprising an end plate [12] and attracting stud [13] connected to one end of the bobbin wherein the attracting stud attracts the armature when the single coil is energized.

Claim 17, Ojima et al. discloses the apparatus of claim 11 further comprising a plurality of shunt components [11a] disposed radially around the actuator between the single coil and the permanent magnet.

Claim 22, Ojima et al. discloses a single coil solenoid comprising: a first magnetic circuit between a movable plunger and a permanent magnet spaced from the movable plunger by a non-magnetic spacer at a first electromagnetic condition created when a single coil of wire is not energized; the non-magnetic spacer disposed in a path in which the movable plunger is configured to move [43, 15 are disposed along the plungers direction of movement], and a second magnetic circuit between the plunger and an attracting member at a second electromagnetic condition created when the single coil of wire is energized [col. 7 line 13 to col. 8 line 20 figures 4 and 5].

Claim Rejections - 35 USC § 103

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4-8 and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ojima et al. [US Pat. #4,419,643] in view of Mumbower [US Pat. #4,845,392].

Claims 4 and 13, Ojima et al. discloses the claimed invention with the exception of using a return spring.

Mumbower discloses a solenoid [figure 7] with a coil [54], a plunger [58] a non-magnetic spacer [56] a magnet [66] and a plunger bias spring [74].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a bias spring to the solenoid of Ojima et al. in order to bias the plunger to the normally open position [figure 3].

Claim 5, Ojima et al. discloses an end plate [12] with an attracting stud [13] connected thereto. It would have been obvious to one of ordinary skill in the art at the time the invention was made to place the return spring between the end plate and the plunger in order to bias the plunger toward the latch position as previously described.

Claim 6, Ojima et al. discloses the solenoid of claim 5 further comprising a housing [10] having the coil, the plunger, the spacer and the bobbin disposed therein [figure 3].

Claim 7, Ojima et al. discloses the solenoid of claim 6 wherein the single coil is wrapped around a bobbin [24].

Claim 8, Ojima et al. discloses the solenoid of claim 7 further comprising a number of shunt components [11, 11a, 12] connected to the bobbin.

Claim 14, Ojima et al. discloses the apparatus of claim 13 wherein the armature is further configured to have a first polarity when the single coil is de-energized and a second polarity when the single coil is energized [col. 7 line 13 to col. 8 line 20].

Claim 15, Ojima et al. discloses the apparatus of claim 14 wherein the second polarity matches a plurality of the permanent magnet [col. 7 line 13 to col. 8 line 20].

Claim 16, Ojima et al. discloses that the second polarity is opposite to a polarity of the end plate [col. 7 line 13 to col. 8 line 20].

Claims 23-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ojima et al. [US Pat. #4,419,643]

Claims 23 and 25-27, as previously discussed in claim 11, it would have been obvious for one of ordinary skill in the art at the time in invention was made to put the components in kit form in order to facilitate on-site assembly of the solenoids [figure 3].

Claim 24, as previously discussed in claim 12, it would have been obvious for one of ordinary skill in the art at the time in invention was made to put the components in kit form in order to facilitate on-site assembly of the solenoids.

Response to Arguments

Applicant's arguments with respect to claims 1, 11, 22 and 23 have been considered but are not persuasive. The Applicant contends that Ojima et al. fails to disclose that the movement of a movable object using both attraction and repellant forces. As noted by the Applicant, Ojima et al. discloses the use of magnetic attraction force to move the core. As shown in figure 4, "in the state in which neither of the operating and release current is applied to an operating and release coil 40, the moving iron core 16 would not be moved by the magnetic energy of the second closed magnetic path because the magnetic flux ϕ_2 is small in quantity. Owing to the magnetic energy of the first closed magnetic path, the moving iron core 16 attempts to remain there when external force is applied thereto" [col. 7 lines 4-12]. The permanent magnet magnetically attracts the core when no current is induced in the core.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bernard Rojas whose telephone number is (571) 272-1998. The examiner can normally be reached on M-F 8-4:00), every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Elvin G. Enad can be reached on (571) 272-1990. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Bernard Rayn
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